SPECTROSCOPIA MOLECULAR

Un bulletin mensual de novas e informationes de interesse e valor al spectroscopistas molecular

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SUMMARIOS DE ARTICULOS FUTUR

Methanos Substituite. XXIV. Constantes De Potential Bro CCl_2F_2. JEROME M. DOWLING. Instituto Technologic de Illinois, Chicago 16. Submittite al J. Chem. Phys. le 30 de julio 1954.

USANTE COMO fundamentales le valores observate in le tertie columna infra

Fundamental	Typo	Numeros de undas in kaysers Observate	Calculate
σ_1	a_1	1099	1098
σ_2	a_1	667.2	671
σ_3	a_1	457.5	455
σ_4	a_1	261.5	263
σ_5	a_2	322	322
σ_6	b_1	922	922
σ_7	b_1	435	433
σ_8	b_2	1162	1162
σ_9	b_2	446	446

le constantes principal del energia potential es: f_c = 5,8468, f_c = 3,4017, md/Å; f_{ff} = 2,0480, f_{cf} = 1,3994, e f_{cc} = 1,0700 md Å/rad^2. In plus, valores de 17 constantes de interaction es date. (Subscriptos f = F, c = Cl, cf = Cl-C-F, etc.) Iste constantes dava le numeros de undas calculate listate in le quarte columna supra. Proprietates thermodynamic etiam esseva calculate. Illos esseva in concordantia con le valores calculate per E. Gelles e K.S.Pitzer, J. Am. Chem. Soc. 75, 5259 (1953).

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Methanos Substituite. XXV. Constantes De Potential E Proprietates Thermodynamic de $CHBr_2F$. HIROMU MURATA, ANN PALM, E ARNOLD G. MEISTER. Instituto Technologic de Illinois, Chicago 16. Submittite al J. Chem. Phys. le 30 de julio 1954.

USANTE COMO fundamentales le valores observate in le tertie columna infra

Fundamental	Typo	Numeros de undas in kaysers Observate	Calculate
σ_1	a'	3016	3017
σ_2	a'	1294	1296
σ_3	a'	1064	1065
σ_4	a'	620	611
σ_5	a'	359	353
σ_6	a'	171	174
σ_7	a"	1170	1170
σ_8	a"	704	703
σ_9	a"	296	297

le constantes principal del energia potential es: f_b = 2,9467, f_f = 5,9558, f_h = 5,0428 md/Å; f_{bf} = 0,85000, f_{bh} = 0,59044, f_{fh} = 1,0200, e f_{bb} = 1,2726 md Å/rad^2. In plus, valores de 27 constantes de interaction es date.

Valores calculate pro le contento caloric, energia libere, entropia,e contento caloric pro le stato gasose ideal sub un pression de 1 atmosphera es:

T(°K)	H/T	-F/T	S°	C_p°
100	8,59	53,38	61,97	10,03
200	10,13	59,80	69,93	13,15
273.16	11,19	63,12	74,31	14,99
298.16	11,53	64,11	75,65	15,56

IL PARE A ME QUE nos omnes debe essayar a promover relationes amabile scientific inter le paises e a facilitar le tener de conventiones scientific international. Tal relationes jam es facite difficile per le necessitate, in alicun paises, de visas de entrata pro scientistas visitante. Alicun sorta de discrimination politic que veni ab le scientistas mesme adde a iste difficultates e pare a me particularmente deplorabile.

-- I. JOLIOT-CURIE, Chem. and Eng. News 32, 3026 (1954).

SUMMARIOS DE ARTICULOS FUTUR, continuate

300	11,56	64,18	75,74	15,60
400	12,83	67,69	80,51	17,57
500	13,93	70,67	84,60	19,06
600	14,88	73,30	88,18	20,19
700	15,68	75,67	91,35	21,05
800	16,42	77,80	94,21	21,73
900	17,04	79,77	96,81	22,28
1000	17,59	81,59	99,18	22,73

$H = H^\circ - E_o^\circ$, $F = F^\circ - E_o^\circ$, e le unitates del quatro quantitates es calorias grado^{-1} mole^{-1}.

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Methanos Substituite. XXVI. Datos Spectral Raman E Infrarubie, Assignationes, Constantes De Potential, E Proprietates Thermodynamic Pro $CHBrCl_2$ E $CDBrCl_2$. SANTIAGO R. POLO, ANN PALM, FRED L. VOELZ, FORREST F. CLEVELAND, ARNOLD G. MEISTER, RICHARD B. BERNSTEIN, E ROBERT H. SHERMAN. Instituto Technologic de Illinois, Chicago 16. Submittite al J. Chem. Phys. le 26 de augusto 1954.

ANALYSE DEL presente e previe datos dava le sequente valores del fundamentales:

Fundamental	Numeros de undas in kaysers $CHBrCl_2$ Cal.	Observate Liq.	Gas	$CDBrCl_2$ Cal.	Observate Liq.	Gas
$\sigma_1(a')$	3041	3021	3028	2243	2253	2264
$\sigma_2(a')$	1167	1170	1177	875	872	881
$\sigma_3(a')$	708	719	734	704	699	713
$\sigma_4(a')$	595	602	597	575	579	-
$\sigma_5(a')$	322	330	-	316	329	-
$\sigma_6(a')$	226	220	-	223	220	-
$\sigma_7(a'')$	1214	1214	1217	905	904	909
$\sigma_8(a'')$	761	760	773	735	735	750
$\sigma_9(a'')$	215	215	-	216	215	-

(Cal. = Calculate, Liq. = Liquido) Usante le valores observate pro le liquido (proque alicun valores non esseva disponibile pro le gas), le constantes principal del energia potential es: f_b = 2,7000, f_c = 3,4204, f_h o f_d = 5,0099 md/Å; f_{bc} = 1,1798, f_{bh} = 0,59044, f_{cc} = 1,1360, e f_{ch} = 0,69700 md Å/rad^2. Valores etiam es date pro 27 constantes de interaction. Pro $CHBrCl_2$, le proprietates thermodynamic es in bon concordantia con illos de E. Gelles e K. S. Pitzer (J. Am. Chem. Soc. 75, 5259 (1953)). Pro $CDBrCl_2$, nulle previe valores esseva trovate. Le presente valores es:

T(°K)	H/T	-F/T	S°	C_p°
100	8,60	52,92	61,53	10,25
200	10,36	59,42	69,78	13,87
273,16	11,61	62,84	74,45	16,15
298,16	12,02	63,87	75,90	16,83
300	12,05	63,95	76,00	16,88
400	13,55	67,63	81,17	19,02
500	14,80	70,78	85,58	20,48
600	15,83	73,58	89,41	21,52
700	16,70	76,09	92,79	22,27
800	17,44	78,36	95,80	22,86
900	18,07	80,49	98,56	23,32
1000	18,61	82,39	101,00	23,68

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Tractamento Del Coordinatas Normal De Dimethyldiacetyleno. ALFONS WEBER E SALVADOR M. FERIGLE. Instituto Technologic de Illinois, Chicago 16. Submittite al J. Chem. Phys. le 1 de augusto 1954.

USANTE COMO fundamentales le valores tabulate infra, le valores del constantes del energia potential es:

Fund.	Cal.	Obs.	Fund.	Cal.	Obs.
$\sigma_1(a_1)$	-	2914K	$\sigma_{10}(e)$	-	2947
$\sigma_2(a_1)$	2274	2264	$\sigma_{11}(e)$	1455	1458
$\sigma_3(a_1)$	1383	1381	$\sigma_{12}(e)$	1035	1030
$\sigma_4(a_1)$	1224	1228	$\sigma_{13}(e)$	347	353
$\sigma_5(a_1)$	547	554	$\sigma_{14}(e)$	104	-
$\sigma_6(a_2)$	-	2947	$\sigma_{15}(e)$	-	2953
$\sigma_7(a_2)$	2160	2163	$\sigma_{16}(e)$	1455	1426
$\sigma_8(a_2)$	1380	1379	$\sigma_{17}(e)$	1035	1022
$\sigma_9(a_2)$	936	941	$\sigma_{18}(e)$	486	475
			$\sigma_{19}(e)$	245	247

(Fund. = Fundamental, Cal. = Calculate, Obs. = Observate)

Constante	Valor	Constante	Valor
f_t	15,4820	f_1	1,15174
f_m	6,63426	f_2	-0,28621
f_{s_t}	5,1296	f_{st}	0,26210
f_{m_t}	0,778701	$f_{mt_{mt}}$	0,317562
f_{s_s}	0,47059	f_{mt_t}	0,003067
f_m^s	0	f_t^t	0

SUMMARIOS DE ARTICULOS FUTUR, continuate

Hic t = C≡C, m = C-C (central), s = C-C (terminal), $f_1 = f_{hh} + f_{hs} + 2f_{hh}^{hh} + 2f_{hs}^{hs} - 2f_{hh}^{hs} - 4f_{hh}^{hs}$, e $f_2 = f_s - f_s^{hs}$ (h = C-H, hs = h-C-C, etc.). Constantes del typo f_x e f_x^y es in md/Å e illos de typo f_{xy} e f_{xy}^{xy} es in md Å/rad^2 (x = t, m, s; y = t, m, s). Le numeros de undas calculate con iste constantes es date in le prime tabula. Proque le frequentias C-H esseva separate ab le alteres in le calculationes, il non ha valores calculate in le region de 3000 K.

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Spectros Raman De 2- E 3-Fluoropyridino. HAROLD P. STEPHENSON E FRED L. VOELZ. Instituto Technologic de Illinois, Chicago 16. Submittite al J. Chem. Phys. le 10 de septembre 1954.

DISPLACIAMENTOS Raman ($\Delta\sigma$) e intensitates relative (I) obtenite pro iste duo moleculas in le stato liquide es:

2-Fluoropyridino		3-Fluoropyridino	
σ	I	σ	I
230	4	244	6
556	1	(410)	md
622	d	499	d
686	md	535	2
(725)	md	616	1
(771)	md	(702)	md
828	2	(757)	md
841	2	818	7
996	7	834	1
1045	3	(982)	md
1099	1	1023	1
1146	md	1038	33
1249	2	1095	d
1303	d	1187	1
1580	d	1225	2
1598	1	1247	1
(1881)	d	(1308)	md
3074	10	(1425)	md
(3094)		1480	d
		1584	1
		1594	1
		3003	d
		(3058)	8
		3069	10

Hic m = multo, d = debile, e le parentheses indica valores que es alique incerte.

NOVE LIBROS

Einfuhrung in die Atomphysik (Introduction Al Physica Atomic). Per WOLFGANG FINKELNBURG. Springer-Verlag, Berlin, Göttingen, Heidelberg, Germania, 1954. Tertie edition. 543 paginas pre—cio DM 44.

ATOMPHYSIK, COMO le termino es usate in iste libro significa le studio del structura del materia quanto al particulas elementari, non solo un studio del atomos mesme. Includite es atomos, ions, electrones, nucleos, e photones; spectros e structura de atomos; theoria quantomechanic de atomos; le physica del nucleos; le physica del molecula; e le physica del stato solide. Un tal tractamento da un vista comprehensive del natura del materia in general. Iste 3tie edition ha, a un grande extento, essite rescribite, specialmente le sectiones super le nucleo e le stato solide. Illo provide un revista excellente de iste campo.

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The Infrared Spectra of Complex Molecules (Le Spectro Infrarubie Del Moleculas Complexe). Per L. J. BELLAMY. London: Methuen e Compania; New York: Compania John Wiley, 440 Fourth Avenue -- augusto 1954. 323 paginas, precio $7.00.

ISTE LIBRO presenta un revista critic del datos super le quales correlationes spectral infrarubie es basate. In cata caso, le classes de compositos que ha essite studiate, e le cognoscite factores que pote influentiar le frequentias o intensitates, es indicate. Le typos de ligatura es grossiermente dividite in quatro classes principal:

1) Le ligamines C-C e C-H,
2) le ligamines C-O e O-H,
3) le ligamines C-N e N-H, e
4) ligamines que involve altere elementos, o que es relatate a structuras inorganic.

Al comenciamento de cata capitulo un breve summario es date del correlationes discutite insimul con un tabula que da regiones del frequentias. Al fin del capitulo le correlationes es summarisate in le forma normal de un designo lineal.

Iste libro va esser de grande valor al

chimistas organic e a illes qui ha un interesse in le detection de compositos incognite in mixturas.

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Introduction to Atomic and Nuclear Physics (Introduction Al Physica Atomic E Nucleari). Per H. Semat. Rinehart and Company, 232 Madison Ave., New York 16. Tertie edition, 1954. 561 paginas, precio $6.50.

UN TRACTAMENTO elementari del structura extra- e intra-nucleari del atomo.

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SYMPOSIO INFRARUBIE DE PARMA

UN SYMPOSIO international super spectroscopia infrarubie esseva tenite al Universitate Parma in Italia ab le 3 al 7 de septembre in conjunction con le XL-essime Congresso National de Physica pro facer honor al memoria de Macedonio Melloni (1798-1854). 50 discursos o contributiones esseva presentate per Barchewitz, Manneback, Lecomte, Plyler, Kastler, Giulotto, Mathieu, Sutherland, Freymann, Duchesne, Sheppard, Mecke, Thompson, Migeotte, e alteres nimis numerose pro mentionar.

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JUNCTE COMMISSION PRO SPECTROSCOPIA

Le Convention de 1954 in Lund

ASSISTEVA AL convention ab le 1 al 3 de julio le membros Bakker, Edlen, Herzberg, Jacquinot, Jenkins, Meggers, seniora Moore-Sitterly, e Pearse, le consiliero Mack, le secretario assistente Klinkenberg, e circa 40 scientistas interessate. Professor J. de Boer representava le Commission Super Symbolos, Unitates, e Nomenclatura del Union International De Physica Pur e Applicate (UIPPA).

Le programma includeva le sequente punctos:

1) Adresse introductori,
2) Processo verbal del convention Roma in septembre 1952,
3) Re-discussion del recommendationes in re kayser e sigma,
4) Altere questiones in re notation e nomenclatura, non specialmente concernite con spectros o moleculas polyatomic,
5) Reporto del sub-committee g (notation in spectros de moleculas polyatomic),
6) Reporto del sub-committee b (informationes super recerca in spectros atomic),
7) Reporto del sub-committee h (excambio de problemas de recerca),
8) Plano de un atlas de datos spectroscopic (Noyes),
9) Destination de un subvention pro publication,
10) Questiones,
11) Data e placia del sequente convention, e
12) Conclusion.

1. In su adresse introductori le presidente (Dr. Meggers) da un breve revista in re le activitate e le historia del Commission Juncte (CJ) e commemorava le duo membros qui ha decedite depost le convention passate (Roma, septembre 1952), i.e. Dr. A. Gatterer e Prof. S. Pienkowski.

2. Le processo verbal del convention Roma, como publicate in J. Opt. Soc. Am. 43, 410-430 (1953), esseva adoptate.

3. Iste puncto esseva proponite per Herzberg qui non poteva assister al convention Roma. Le ration principal pro su opposition al decisiones Roma esseva le facto que le CJ non representa omne le scientistas interessate, e que nulle voto ha essite acceptate ab un numero sufficiente de astronomos, physicos, e chimistas pro obtener un decision significative de majoritate con reguardo al questiones de kayser e sigma. Le CJ ha nulle membros qui representa chimia, e solmente alicunes del multo numerose laboratores in le spectroscopia chimic e spectros polyatomic sequerea voluntarimente le recommendationes. In supporto de iste opinion Herzberg communicava le resultatos de un voto informal acceptate al Symposio al Universitate Ohio State le 15 de junio 1954. Le motion de Herzberg pro le retraction del recommendationes concernente kayser e sigma usque un concordantia general esserea attingite recipeva nulle supporto in le CJ. Longe discussiones se disveloppava durante le quales plure resolutiones esseva proponite e rejectate. Finalmente le CJ se decideva a mantener le recommendationes con le sequente emendamentos:

Le symbolo σ debe esser usate pro in-

dicar $1/\lambda_v$ (v = vacuo). Il esseva recognoscite que le UIPPA recommenda $\tilde{\nu}$ como symbolo alternative de numero de undas. Il esseva recognoscite que specialmente in le campo del spectros de moleculas polyatomic il essera difficile cambiar le ben-establite convention de denotar le numeros de undas vibrational per ν. Quando confusion con frequentia es possibile le uso de $\tilde{\nu}$ o ν' es proponite. Il debe esser sublineate de nove que le recommendationes del CJ non es compulsori.

De plus, un questionario essera circulate inter un gruppo representative de spectroscopistas pro assecurar lor opiniones in re le symbolo e unitate del numero de undas. Le recommendationes Roma essera reconsiderate al convention 1956 in le lumine del resultatos del questionario.

Un proposition de Prof. A. D. Fokker (Haarlem, Hollanda) pro introducer le parola repetency pro numero de undas esseva discutite. Le argumento principal esseva que repetency pote esser acceptate plus facilemente como un vector. Le desirabilitate de introducer un nove expression esseva sentite per multes presente sed il habera un certe reluctantia de acceptar repetency, specialmente inter illes cuje lingua native es anglese. Etiam, il esseva notate que iste parola suggere un repetition in tempore in loco de in spatio, o que al minus illo non contine alicun notion de repetition in longitude. Le CJ decideva que le question in re repetency deberea esser includite in le questionario supra-mentionate.

4. Le designation del unitate de longitude de unda etiam esseva discutite. Le sub-committee e habeva recommendate A in su reporto. De facto isto non habeva essite discutite in Roma a causa de un previe decision per le Union International Astronomic (UIA) in Stockholm in 1938 que esseva considerate como final. In practica, nonobstante, il pare que solmente in le Statos Unite ha essite adoptate le symbolo A, e etiam illac non universalmente, durante que in altere paises le symbolo Å es preferite. De plus, Å ha essite adoptate per UIPPA e UICPA (Union International de Chimia Pur e Applicate), e per le Bureau International des Poids et Mesures (BIPM). In vista de isto, le CJ decideva recommendar le uso de Å in loco de A pro le unitate Ångström.

5. Proque le consiliero Mulliken esseva absente a causa de un subite indisposition, su reporto in re notation in le spectros de moleculas polyatomic esseva presentate per Herzberg. Le reporto esseva adoptate pro publication con le provision que alicun cambiamentos e additiones de importantia minor es facite per Prof. Mulliken pro satisfacer le commentos recipite. Le membros Herzberg, Jenkins, e Pearse esseva cargate a assister Prof. Mulliken in le preparation del reporto final.

6. Un reporto del sub-committee b concernente le presente condition del recerca in le spectros atomic esseva presentate per Dr. Meggers. Ille annunciava que le volumine III de Atomic Energy Levels (Nivellos de Energia Atomic) va esser completate in 1955, e volumine IV (le qual va continer le elementos Ce a Lu e Th a 100) probabilemente in 1958. Emphase esseva placiate super le datos nondum disponibile e spectroscopistas esseva urgite de informar le sub-comittee in re nove datos.

7. Prof. Mack presentava le reporto provisori del sub-committee h concernente le questionario 1953. Infelicemente le altere membro de iste sub-committee, Prof. Swings, non poteva venir a iste convention a causa de un maladia. Le CJ cargava le sub-committee Swings-Mack a essayar colliger plus responsas e preparar un reporto pro publication in 1955.

8. Le proposition de Prof. Noyes in re un Atlas de Datos Spectroscopic esseva considerate. In principio le CJ concordava con le plus grande parte del conclusiones de Prof. Noyes. Nonobstante, le CJ sentiva que Prof. Noyes exaggera alique le parve ressources al disposition del CJ pro le labor suggerite. Etiam il esseva sentite que le assistentia de spectroscopistas chimic esserea requirite. Il esseva proponite establir relationes concernente atlases con le subcommissiones super spectrographia emissionic e absorptionic del UICPA, preferabilemente per appunctar membros del CJ

como consilieros de iste subcommissiones, e vice versa. Pro le residuo le CJ habeva le impression que Prof. Noyes non habeva appreciate adequatemente le labor facite usque nunc, specialmente con reguardo al puncto 1 de su plano, in le qual nulle mention esseva facite del compilationes componite per sub-committee b. Il esseva decidite que iste sub-committee debe provider Prof. Noyes con omne information pertinente e requesta que ille submitte un explication plus detaliate de su remarco.

9. Le subvention de publication debe esser usate pro publication del processo verbal abbreviate, e del reportos del sub-committees g e h.

10. Dr. E.C. Bullard, chef del Laboratorio Physic National a Teddington (Anglaterra) notava in un littera al secretario que le factor de conversion pro le transformation de un differentia in numeros de undas in un energia que es mesurate in electron-volts, como adoptate al convention Roma, differe ab le plus recente valor per 6 vices le error standard. Le CJ trova nulle occasion pro cambiar le factor recommendate proque le recommendation esseva facite pro obtener uniformitate, non pro plus grande precision. Le factor es usate practicamente solmente pro exprimer le energia de ionisation in electron-volts. Le error in le factor de conversion semper es negligibile in comparation con le incertitude in le energia de ionisation mesme. Iste vista debe esser apportate al attention de Dr. Bullard.

11. Con reguardo al convention 1956 le CJ ha recipite 3 invitationes, 1 ab Belgica, 2 ab le Statos Unite. Proque tres conventiones consecutive ha essite tenite in Europa, il esseva sentite generalmente que un convention in le Statos Unite debe esser planate pro 1956. Le CJ decideva essayar a junger se con le symposio annual super spectros e structura molecular al universitate Ohio State in Columbus in junio 1956, o alternativemente a convenir al Bureau National de Standards in Washington, D. C.

-- WILLIAM F. MEGGERS, Presidente
Commission Juncte Pro Spectroscopia
Bureau National de Standards
Washington 25, D. C., Statos Unite

NOVAS

PROF. Y. MORINO va recercar iste anno in le laboratorio de Prof. Walter F. Edgell al Universitate Purdue in Lafayette, Indiana, Statos Unite.

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DR. NORMAN JONES del Consilio National de Recerca a Ottawa in Canada presentava un discurso super spectrometria infrarubie como utensile in le recerca al Universitate Wayne a Detroit in Michigan le 25 de octobre.

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DR. J. RUD NIELSEN del Universitate Oklahoma in Norman ha recipite ab le Statounitese Commission de Energia Atomic un subvention de $9311 pro recerca super le proprietates spectroscopic de fluores de carbon e hydrogenos de carbon fluorinate.

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DR. M. ZAKI EL-SABBAN, post un anno de recerca al Universitate Oklahoma in le laboratorio de Prof. Nielsen, ha retornate a su laboratorio in le Instituto de Vaccino e Sero a Agouza, Cairo, Egypto.

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NORELCO REPORTER es un nove periodico establite per le compania North American Philips pro recordar avantiamentos in le multe campos ubi diffraction e spectrographia de radios X es de valor, e pro reportar nove discopertas e technicas in microscopia e diffraction electronic. Isto va includer articulos, notitias de conventiones, e novas. Le redactor es George A. Garnes, 750 South Fulton Ave., Mount Vernon, New York, Statos Unite.

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H.B. KLEVENS E J. R. PLATT es autores de un Revista del Spectros Ultraviolette Vacue de Compositos Organic in Solution. Isto contine 25 paginas, 160 spectros, e 58 figuras, e es reimprimite ab un reporto technic del Office of Naval Research. (Universitate Chicago, Illinois, Statos Unite.)

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UN PIGRE STUDENTE (secundo The Laboratory, periodico del compania Fisher Scientific) sollicitava un patente pro le exploitation de su these. Le rejection contineva omne le citationes necessari pro le these, assi sparniante a ille iste labor tediose.

CALENDARIO DE EVENTOS SPECTROSCOPIC

Novembre 8-10. Symposio super Avantiamentos Moderne in le Technicas Microundic. Engineering Societies Building, New York, N. Y. (Polytechnic Institute of Brooklyn, Microwave Research Institute, 55 Johnson Street, Brooklyn 1, New York)

Novembre 17-18. Symposio 'Direct Reading'. Boston, Mass., S.U. (Baird Associates, 33 University Road, Cambridge, Mass., Statos Unite.)

Februario 28. Symposio Infrarubie in Pittsburgh, Pa., S.U. (Baird Associates, le mesme adresse.)

Feb. 28-Martio 4. Conferentia super Spectroscopia Applicate in Pittsburgh.

Maio 26-27. Societate pro Spectroscopia Applicate, 10me Symposio Annual e exhibition. New York.

Junio 13-17. 10me Symposio Annual super Spectroscopia e Structura Molecular. Columbus. (H. H. Nielsen, Departimento de Physica, Universitate Ohio State, Columbus 10, Ohio, Statos Unite.)

Junio 1956. Convention del Commission Juncte pro Spectroscopia, Columbus, Ohio o Washington, D. C., S.U. (W. F. Meggers Bureau National de Standards, Washington 25, D.C., Statos Unite.)

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STATISTICAS VITAL

Numero de contributiones durante le mense passate 12

Distribution: 500 exemplares a 26 paises.

Costo de un numero de 5 paginas per lector per anno $2.00

Contributiones usque nunc per lector per anno $1.07

Numero de exemplares del monographia, "Regulas de Selection pro Spectros Vibrational de Moleculas Polyatomic" vendite usque nunc 60

Presente numero de membros del Societate del Spectroscopistas Molecular.. 16 (Spectroscopistas qui desira devenir membros de iste societate debe retornar le formulario de application (pagina 19a), o scriber al Redactor, Spectroscopia Molecular, Cassa Postal 58, Instituto Technologic de Illinois, Chicago 16, Illinois, Statos Unite.)

SPECTROSCOPIA MOLECULAR es redigite e publicate mensualmente in interlingua per Prof. Forrest F. Cleveland, Laboratorio de Spectroscopia, Instituto Technologic de Illinois, Chicago 16, Illinois, Statos Unite. Manuscriptos pro publication debe esser submittite illac.

Le texto original es legite per Dr. Alexander Gode, Chef del Division de Interlingua de Science Service (80 East 11th St., New York 3, N.Y.). Libros importante super interlingua, disponibile ab ille adresse, es Interlingua-English Dictionary, Interlingua Grammar, e Interlingua A Prime Vista.

Labor editorial es gratis. Le costo de preparation e distribution es recipite ab spectroscopistas, bibliothecas, e companias. Le directores de publication es senioretta Ruth Grining e seniores Fred L. Voelz e Jerome M. Dowling.

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. (Face cheques pagabile a Spectroscopia .Molecular; posta al supra-date adresse.)

.☐ Io include $2.00 pro Spectroscopia .Molecular pro 1954, e $____ additional .pro le disveloppamento plus rapide de .illo.

.☐ Io include $2.00 pro le numeros de .1952 o 1953; o $4.00 pro 1952 e 1953.

.☐ Io include $0.75 pro Regulas de Se-.lection pro Spectros Vibrational de Mo-.leculas Polyatomic; 1953, 25 paginas.

.☐ Io include $____ e 500 exemplares de .un pagina de information re nostre pro-.ductos pro attachamento al sequente nu-.mero. (Traduction in interlingua, si .desirate, gratis per Science Service.)

.☐ Adde mi nomine al lista de membros .del Societate del Spectroscopistas Mo-.lecular. Io include $___ como contribu-.tion voluntari al expensas de iste so-.cietate.

.Nomine:
.Adresse:

. . . . . .

FACTS ON INFRARED FOR THE LABORATORY

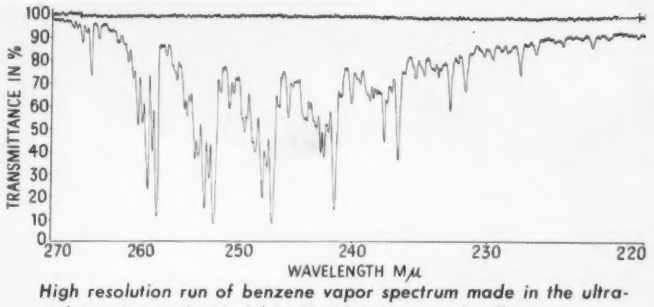
The Model 13-U Universal Spectrophotometer is the first instrument to provide complete coverage of the ultraviolet, visible, near-infrared, and fundamental infrared regions *—from 205 millimicrons to 15.5 microns.* An accessory prism extends the range to 37.5 microns.

Optimum performance is obtained throughout the entire range. The instrument features high speed scanning, excellent resolution and measurement precision. A wide variety of sampling accessories for solid, liquid and gaseous samples greatly extends the usefulness of the new spectrophotometer. A Model 13-U equipped with a microscope becomes a Microspectrophotometer—capable of recording spectra on single fibers, small crystals, etc.

Because of the versatility and flexibility of the Model 13-U, it can handle practically any analysis to which absorption spectroscopy techniques apply. Here, in one instrument, is all the analytical equipment needed to equip a first-rate spectroscopy laboratory and at moderate cost.

Complete Spectroscopy Lab in One Instrument

Transmittance Recording from the Ultraviolet to the Far Infrared



High resolution run of benzene vapor spectrum made in the ultraviolet region on the Model 13-U with a 1 cm. path cell.

The Perkin-Elmer Corporation
831 Main Avenue, Norwalk, Conn.

☐ Please send me information on the Model 13-U.

☐ Please send me further information on other laboratory, process stream instruments of your manufacture.

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Baird Associates

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SPECTROGRAPHIC

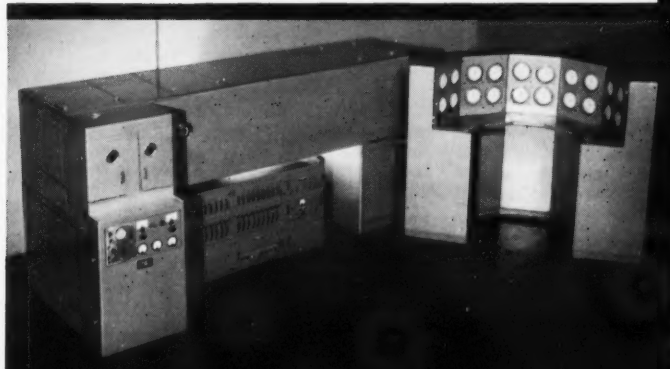
Baird Associates Spectrographic Laboratory provides all the specialized equipment which modern photographic analysis and control demand. The 1955 instrument and accessories offer the most versatile, the most reliable performance of any on the market. Baird Associates is the most experienced manufacturer of the large grating spectrograph. Its service policy with all of its instruments is without equal.

See Technical Bulletin #32

SPECTROMETRIC

Baird Associates Spectrometric Laboratory provides almost instant analysis for quality controlled products in metals production and fabrication. Unique qualities of simplicity of design and operation, of freedom from electronic headaches, make it the choice of discriminating chemists and metallurgists in the industry. The 1955 instrument offers improved optical stability, more precise monitoring, increased flexibility in spectrum line selection.

See NEW Technical Bulletin #34



SPECTROPHOTOMETRIC

Baird Associates Spectrophotometric Laboratory is standard with many of the confident, progressive organic chemical companies. The double beam infra-red system of the instrument is mandatory where large volume analyses is the rule. The spectrophotometer's basic design is uniquely advantageous for easy maintenance, for simple operation and control, for chart records which are quickly read and easily filled.

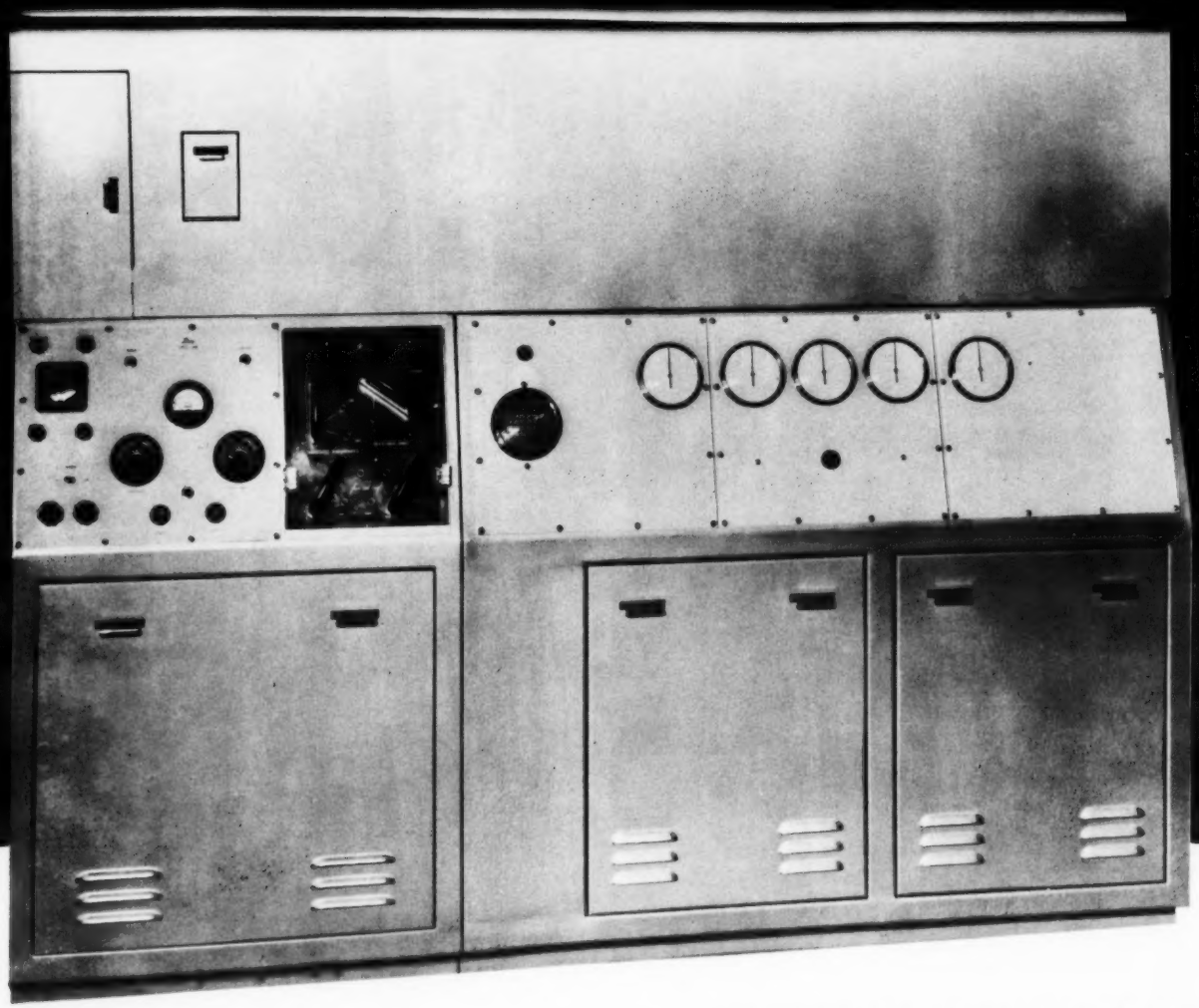
See Technical Bulletin #33

Baird Associates, Inc.

33 UNIVERSITY ROAD, CAMBRIDGE 38, MASSACHUSETTS, U.S.A.

XUM

JAco Atomcounter Direct Reading Spectrometer



A new instrument with exclusive design features that provide unusual speed, precision and versatility

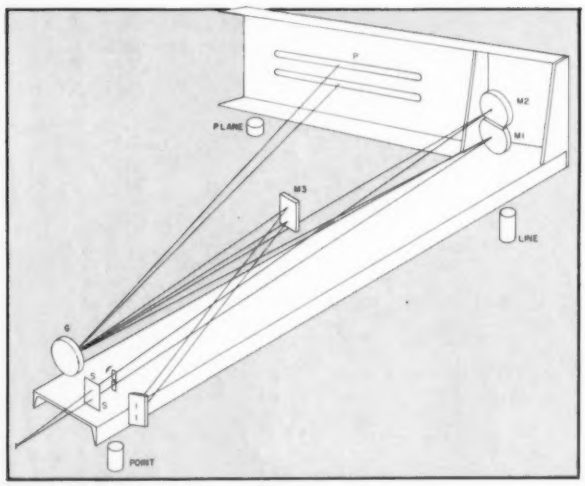


FIGURE 1

The SPECTROMETER — The dispersing system of the JAco *Atomcounter* (Figure 1) consists of a Wadsworth 1.5 meter stigmatic concave grating mount, with a 30,000 line/inch ruling (G) giving 5.3A/mm and good intensity over a range of 2300 to 4300 A. Two collimating mirrors (M1 and M2) are utilized to produce two similar spectra, one above the other, each at full intensity. This important feature (patent applied for) 1) makes it possible to measure two lines very close together, one in the lower spectrum, the other in the upper; 2) provides double the normal space for mounting photomultipliers; 3) makes it possible to employ photomultipliers directly behind almost all lines, without the need for one or more mirrors for each channel to deflect the light onto the appropriate photomultiplier. The functional components — the double slit, two mirrors, grating and two focal curves with slits — are mounted on a substantial welded steel L frame. This frame is supported on kinematical mounts from an outer frame which is well-insulated by fiberglass to reduce the effects on the spectrograph of variations in external room temperatures. (Cooling plates and connections for a refrigerating unit are supplied if the room is not air conditioned.)

Fixed entrance and exit slits are employed. Exit slits can be applied in the laboratory, adjusted in place by oscilloscope, and then clamped in position.

(Continued)

JAco Atomcounter

Direct Reading Spectrometer

The SPECTROMETER (Continued)

Refractor quartz plates placed immediately behind the entrance slits can be used to scan the spectrum across the exit slits by any amount up to approximately 200 microns. The adjustment is sensitive and makes it possible to correct for any temperature fluctuations.

The spectrometer can be supplied with a single mirror and single focal deck only, which is entirely adequate for simple steels and cast irons. The dual deck is suggested for those who may wish in the future to analyze alloys with more complex spectra, or alternatively who would like to photograph a spectrum at the same time as the direct reading exposure. This latter feature is valuable if the laboratory is likely to be requested for qualitative or semi-quantitative analyses on materials so varied or in such small quantities that exclusive direct reading techniques are not warranted.

The samples to be analyzed may be in the form of flat disc castings, or pins which are mounted on a Petrey Stand or pin holder attachment. Access to the specimen holder is provided by the door at the front of the *Atomcounter*.

The EXCITATION UNIT — For an excitation source, the JAco *Atomcounter* utilizes a high voltage spark with auxiliary air quenched gap. This source is recognized as most suitable for precise quantitative analysis of steels and all ferrous or non-ferrous materials. For low concentrations either a low voltage ignited AC arc or a high voltage self-sustaining AC arc may be employed.

The transformer of the high voltage spark circuit has a peak voltage of 33 KV, and the unit will deliver up to 14 RF amperes. Three inductance settings are available: residual, 100 or 500 microhenries. Capacitance is adjustable in four steps of .0025, .005, .0075 and .010 microfarad. Auxiliary gap spacing is adjustable from the operating panel. By changing the parameters, the number of discharges per half cycle may be varied from one to ten. The 5" cathode ray tube of the *Atomcounter* detector circuit may be employed to study the performance of the excitation unit.

The control panel includes switches for changing inductance and capacitance, the RF ammeter and the pre-spark and exposure timers.

Detection, Integration and Data Presentation Circuits

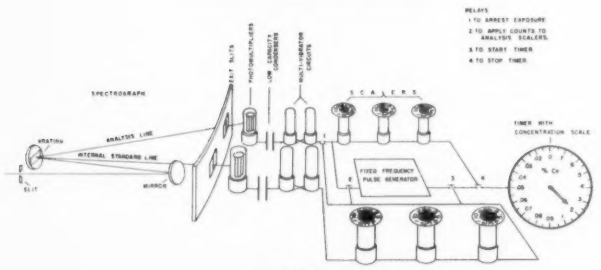


FIGURE 2

A schematic diagram of the electronic circuits is shown in Figure 2. The current from the photomultiplier tube charges a high quality condenser of small capacity. When the voltage on the condenser reaches a definite value, a pulse is applied through a 'multivibrator' circuit to the first glow discharge tube of a scaler unit. At the same time the condenser is discharged. The condenser charges up once more and adds a second pulse to the scaler. This sequence is repeated by the "multivibrator circuit" throughout the exposure cycle, so that the scaler ends up with a number of counts which is proportional to the intensity of the light falling on the photomultiplier.

The controls on the matrix channel are adjusted so that it counts more rapidly than all of the analytical channels. When the matrix scaler reaches a count of 1000 all other circuits are broken and the source unit is shut off. The scaler for each analytical line is then left with a definite number of counts, less than 1000, which is a measure of the concentration of that element in the sample. For converting this count into a concentration reading, each scaler is connected to a fixed frequency pulse generator (F.F.P.) which continues the counting at a 60 cycle frequency until the count for that channel reaches 1000. At the same time the fixed frequency generator is actuating a series of 60 cycle timers, one for each element. When the count for a particular element reaches 1000, its timer is stopped. The deflection of the timer therefore measures 1000−N, where N is the number of counts on the scaler due to the exposure. The working curve is made up by plotting 1000−N against concentration, as in Figure 3. The dial for each timer can therefore be calibrated in terms of concentration, and the results for each sample are read off directly from the dials. Lateral shifts of the working curve may be compensated by a simple rotation of the clock dial.

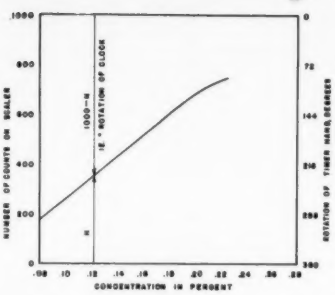


FIGURE 3

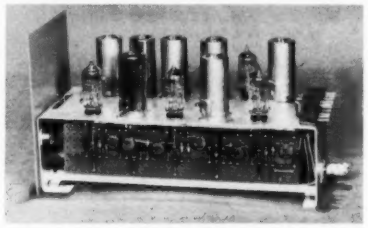


FIGURE 4

The basic electronic console includes regulated power supplies, connections for 21 decade resistors for setting the gain of the 21 photomultipliers, the oscilloscope and controls for monitoring the individual channels or for studying the source, and the fixed frequency pulse generator. It has knockouts for 18 timers and racks for 21 individual channels.

The individual channels include a fixed slit, photomultiplier, decade resistor, multivibrator and scaler circuit, the timer and a relay circuit. The multivibrator and scaler circuits (Figure 4) are built on a plug-in chassis which can be inserted and locked in its rack by a simple knob.

An important feature of the JAco direct reading electronic circuit is that it employs normal inexpensive and rugged relays in all of the circuit breaking and making required to start and stop the exposures and to start and stop the clocks. This is possible because the relays are used only to make or break connections to the power supplies and are not used to make connections in the measuring circuits themselves. Thus only the constancy of time responses is important and this is readily achieved in even an inexpensive relay. A reproducible resistance at contact, which is very difficult to achieve, is not required. This is made possible by converting the photomultiplier output immediately by reproducible electronic tube circuits into pulses, the number of which is proportional to the light intensity.

The whole unit is designed to operate from 220 volt, 60 cycle single phase current. It can be supplied also for 230 volt, 50 cycle single phase.

All of these advantages are yours only in the JAco *Atomcounter*

1. Compact — self-contained unit occupies approximately 81¼" x 43¾".
2. Rapid — the complete analysis normally requires less than one minute.
3. Precise — standard deviations of 1-2%.
4. Simple and inexpensive construction.
5. Unitized construction makes servicing simple.
6. Versatile — use photographically for qualitative or semi-quantitative analysis, simultaneously with or alternatively to the direct reading measurements.

JAco JARRELL-ASH COMPANY

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